

CLAIMS

1. An injection molding machine characterized by comprising:
 - (a) a plurality of cavities formed in a mold apparatus;
 - (b) resin passages for charging resin into the cavities;
 - (c) a plurality of valves respectively disposed in the resin passages corresponding to the cavities and adapted to selectively open and close the corresponding resin passages; and
 - (d) a controller for controlling the valves.
2. An injection molding machine according to claim 1, wherein the controller opens and closes the plurality of valves in accordance with respective molding conditions of the cavities.
3. An injection molding machine according to claim 2, wherein the controller controls timings at which the respective valves are opened and closed, such that charging of resin, or pressure-holding or cooling of the charged resin is completed simultaneously at a cavity having a large shot volume and a cavity having a small shot volume.
4. An injection molding machine according to any one of claims 1 to 3, further comprising:
 - (a) an injection apparatus for supplying resin, wherein
 - (b) the injection apparatus meters, in a single metering step, resin to be charged into all the cavities.
5. An injection molding machine according to any one of claims 1 to 3, further comprising:
 - (a) an injection apparatus for supplying resin, wherein

(b) the injection apparatus meters, in a plurality of metering steps, resin to be charged into all the cavities.

6. An injection molding machine according to any one of claims 1 to 5, wherein

(a) the mold apparatus includes a stationary mold, a movable mold, and an intermediate mold,

(b) the cavities are formed between the intermediate mold and the stationary mold and between the intermediate mold and the movable mold, and

(c) the controller controls the injection molding machine such that mold closing, mold clamping, and mold opening between the intermediate mold and the stationary mold are performed independently of mold closing, mold clamping, and mold opening between the intermediate mold and the movable mold.

7. An injection molding machine according to claim 6, wherein the mold opening between the intermediate mold and the stationary mold and the mold opening between the intermediate mold and the movable mold are performed alternately.

8. An injection molding machine according to claim 1, further comprising:

(a) a stationary-mold support apparatus;

(b) a first movable-mold support apparatus movable in relation to the stationary-mold support apparatus; and

(c) a second movable-mold support apparatus which is disposed between the stationary-mold support apparatus and the first

movable-mold support apparatus and to which are attached corresponding ones of two pairs of mutually facing molds that form cavities.

9. An injection molding machine according to claim 8, further comprising:

(a) a first mold apparatus composed of a pair of molds attached to the stationary-mold support apparatus and the second movable-mold support apparatus, respectively, and

(b) a second mold apparatus composed of a pair of molds attached to the first movable-mold support apparatus and the second movable-mold support apparatus, respectively, wherein

(c) mold closing, mold clamping, and mold opening of the first mold apparatus are performed independently of mold closing, mold clamping, and mold opening of the second mold apparatus.

10. An injection molding machine according to claim 8 or 9, further comprising a drive apparatus for the second movable-mold support apparatus which moves the second movable-mold support apparatus independently of the first movable-mold support apparatus.

11. An injection molding machine according to claim 10, wherein the drive apparatus for the second movable-mold support apparatus is attached to the second movable-mold support apparatus.

12. An injection molding machine according to claim 10, wherein the drive apparatus for the second movable-mold support apparatus is attached to the stationary-mold support

apparatus or the first movable-mold support apparatus.

13. An injection molding machine according to any one of claims 1 to 7, wherein the valves are disposed in the mold apparatus.

14. An injection molding machine according to claim 6 or 7, wherein the valves are disposed at least in the stationary mold or the intermediate mold.

15. An injection molding machine according to any one of claims 8 to 14, wherein the second movable-mold support apparatus moves along tie bars disposed to extend between the stationary-mold support apparatus and the first movable-mold support apparatus.

16. An injection molding machine according to any one of claims 8 to 14, wherein the second movable-mold support apparatus moves along guide means attached to a frame.

17. An injection molding machine according to any one of claims 8 to 16, wherein the second movable-mold support apparatus includes valves for selecting the resin passages corresponding to the cavities.

18. An injection molding machine according to claim 17, wherein the valves are a plurality of shutoff means.

19. An injection molding machine according to claim 18, wherein the shutoff means are controlled at arbitrary timings.

20. An injection molding machine according to any one of claims 8 to 19, wherein molded products are produced in accordance with the respective molding conditions of the cavities.

21. An injection molding machine according to any one of claims 8 to 20, wherein an ejector apparatus is disposed on the stationary-mold support apparatus and the first movable-mold support.

22. An injection molding method for

(a) producing a first molded product in a first cavity formed between a stationary mold and an intermediate mold and producing a second molded product, which differs in shape from the first molded product, in a second cavity formed between the intermediate mold and a movable mold, the method being characterized by comprising:

(b) charging resin into one cavity at a first timing via a resin passage in the intermediate mold;

(c) controlling the resin passage by means of valves provided within the intermediate mold so as to establish communication between the resin passage and the other cavity; and

(d) charging the resin into the other cavity at a second timing via the resin passage in the intermediate mold.

23. An injection molding method for

(a) producing a first molded product by use of a first mold apparatus disposed between a first movable-mold support apparatus and a second movable-mold support apparatus, and producing a second molded product by use of a second mold apparatus disposed between the second movable-mold support apparatus and a stationary-mold support apparatus, the method being characterized by comprising:

(b) charging resin at a first timing into a first cavity

formed in the first mold apparatus via a resin passage in the second movable-mold support apparatus; and

(c) charging resin at a second timing into a second cavity formed in the second mold apparatus via the resin passage in the second movable-mold support apparatus.